



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

**Division of Facilities Construction and Management**

**DFCM**

**MULTI-STEP BIDDING PROCESS  
FOR  
CONTRACTORS**

**Request For Solicitation For  
Construction Services**

**Stage II – Electrical Contractors Bidders List**

**July 6, 2006**

**FIRE SYSTEMS UPGRADE  
REGION 3**

**DEPARTMENT OF TRANSPORTATION  
OREM, UTAH**

**DFCM Project No. : 05233900**

Protection Consultants Inc.  
182 South 600 East, Suite #202  
Salt Lake City, Utah 84102-2060

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Current copies of the following documents are hereby made part of these contract documents by reference. These documents are available on the DFCM web site at <http://dfcm.utah.gov> or are available upon request from DFCM:

DFCM General Conditions dated May 25, 2005

DFCM Application and Certificate for Payment dated May 25, 2005

Technical Specifications & Drawings: Protection Consultants Inc.

**The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at <http://dfcm.utah.gov>**

## **INVITATION TO BID**

**ONLY FIRMS PRE-QUALIFIED DURING STAGE I OF THE RFS ARE ALLOWED TO BID ON THIS PROJECT**

The State of Utah - Division of Facilities Construction and Management (DFCM) is requesting bids for the construction of the following project:

**FIRE SYSTEMS UPGRADE - REGION 3**  
**DEPARTMENT OF TRANSPORTATION – OREM, UTAH**  
**PROJECT NO: 05233900**

Project Description: Install new fire alarm and suppression systems in the Administration, Lab, Warehouse and Shop Buildings. Construction Cost Estimate: \$300,000.

<u>FIRM NAME</u>	<u>POINT OF CONTACT</u>	<u>PHONE</u>	<u>FAX</u>
Arco Electric	Paula Sorensen	(801) 566-1695	(801) 566-0927
Capital Electric	Mike Mora	(801) 908-6660	(801) 908-6667
Electro Specialist, Inc.	Gordon Banks	(801) 572-2998	(801) 572-5658
Hidden Peak Electric Co., Inc	Brian Bales	(801) 262-5513	(801) 262-5689
Power Electric Company	Tina Sheppard	(801) 288-1064	(801) 288-1065
Taylor Electric and Engineering	Chris Joyal	(801) 413-1300	(801) 413-1361
Utah Controls, Inc.	Jeff Keller	(801) 990-1950	(801) 990-1955

The bid documents will be available at 4:00 PM on Thursday, July 6, 2006 in electronic format from DFCM at 4110 State Office Building, Salt Lake City, Utah 84114, telephone (801)538-3018 and on the DFCM web page at <http://dfcm.utah.gov>. For questions regarding this project, please contact Jim Russell, DFCM Project Manager, at (801)538-9784. No others are to be contacted regarding this project. A **MANDATORY** pre-bid meeting and site visit will be held at 11:00 AM on Tuesday, July 11, 2006 at UDOT Region 3 Administration Building, 658 North 1500 West, Orem, Utah. All pre-qualified prime contractors wishing to bid on this project must attend this meeting.

Bids must be submitted by 3:00 PM on Wednesday July 26, 2006 to DFCM, 4110 State Office Building, Salt Lake City, Utah 84114. Bids will be opened and read aloud in the DFCM Conference Room, 4110 State Office Building, Salt Lake City, Utah. Note: Bids must be received at 4110 State Office Building by the specified time. The contractor shall comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

A bid bond in the amount of five percent (5%) of the bid amount, made payable to the Division of Facilities Construction and Management on DFCM's bid bond form, shall accompany the bid.

The Division of Facilities Construction & Management reserves the right to reject any or all bids or to waive any formality or technicality in any bid in the interest of the State.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT  
MARLA WORKMAN, CONTRACT COORDINATOR  
4110 State Office Bldg., Salt Lake City, Utah 84114

## **STAGE II - MULTI-STEP BIDDING PROCESS**

**ONLY FIRMS PRE-QUALIFIED DURING STAGE I OF THE RFS ARE ALLOWED TO BID ON THIS PROJECT**

### **1. Invitational Bid Procedures**

The following is an overview of the invitational bid process. More detailed information is contained throughout the document. Contractors are responsible for reading and complying with all information contained in this document.

Notification: DFCM will notify each registered pre-qualified firm (via fax or e-mail) when a project is ready for Construction Services and invite them to bid on the project.

Description of Work: A description of work or plans/specifications will be given to each contractor. If required, the plans and specifications will be available on the DFCM web page at <http://dfcm.utah.gov> and on CDs from DFCM, at 4110 State Office Building, Salt Lake City, Utah 84114.

Schedule: The Stage II Schedule shows critical dates including the mandatory pre-bid site meeting (if required), the question and answer period, the bid submittal deadline, the subcontractor list submittal deadline, etc. Contractors are responsible for meeting all deadlines shown on the schedule.

Mandatory Pre-Bid Site Meeting: If a firm fails to attend a pre-bid site meeting labeled “Mandatory” they will not be allowed to bid on the project. At the mandatory meeting, contractors may have an opportunity to inspect the site, receive additional instructions and ask questions about project. The schedule contains information on the date, time, and place of the mandatory pre-bid site meeting.

Written Questions: All questions must be in writing and directed to DFCM’s project manager assigned to this project. No others are to be contacted regarding this project. The schedule contains information on the deadline for submitting questions.

Addendum: All clarifications from DFCM will be in writing and issued as an addendum to the RFS. Addenda will be posted on DFCM’s web site at <http://dfcm.utah.gov>. Contractors are responsible for obtaining information contained in each addendum from the web site. Addenda issued prior to the submittal deadline shall become part of the bidding process and must be acknowledged on the bid form. Failure to acknowledge addenda may result in disqualification from bidding.

Submitting Bids: Bids must be submitted to DFCM 4110 State Office Building, Salt Lake City, Utah 84114 by the deadline indicated on the schedule. Bids submitted after the deadline will not be accepted. Bids will be opened at DFCM on the date, time, and place indicated on the schedule.

Subcontractors List: The firm selected for the project must submit a list of all subcontractors by the deadline indicated on the schedule contained in this document.

Pre-qualified List of Contractors: Contractors shall remain on DFCM’s list of pre-qualified contractors provided: (a) they maintain a performance rating of 4 or greater on each project, (b) they are not suspended for failure to comply with requirements of their contract, (c) the firm has not undergone a significant reorganization involving the loss of key personnel (site superintendents, project managers, owners, etc.) to a degree such that the firm no longer meets the pre-qualification requirements outlined in Stage I, (d) the financial viability of the firm has not significantly changed, and (e) the firm is not otherwise disqualified by DFCM. Note: If a contractor fails to comply with items (a) through (e) above, they may be removed from DFCM’s list of pre-qualified contractors following an evaluation by a review committee. Contractors will be given the opportunity to address the review committee before a decision is made. Pre-qualified contractors are ONLY authorized to bid on projects within the discipline that they were originally pre-qualified under.

**2. Drawings and Specifications and Interpretations**

Drawings, specifications and other contract documents may be obtained as stated in the Invitation to Bid. If any firm is in doubt as to the meaning or interpretation of any part of the drawings, specifications, scope of work or contract documents, they shall submit, in writing, a request for interpretation to the authorized DFCM representative by the deadline identified in the schedule. Answers to questions and interpretations will be made via addenda issued by DFCM. Neither DFCM or the designer shall be responsible for incorrect information obtained by contractors from sources other than the official drawings/specifications and addenda issued by DFCM.

**3. Product Approvals**

Where reference is made to one or more proprietary products in the contract documents, but restrictive descriptive materials of one or more manufacturer(s) is referred to in the contract documents, the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the drawings and specifications and are compatible with the intent and purpose of the design, subject to the written approval of the Designer. Such written approval must occur prior to the deadline established for the last scheduled addendum to be issued. The Designer's written approval will be included as part of the addendum issued by DFCM. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design as determined by the Designer.

**4. Addenda**

All clarifications from DFCM will be in writing and issued as an addendum to the RFS. Addenda will be posted on DFCM's web site at <http://dfcm.utah.gov>. Contractors are responsible for obtaining information contained in each addendum from the web site. Addenda issued prior to the submittal deadline shall become part of the bidding process and must be acknowledged on the bid form. Failure to acknowledge addenda shall result in disqualification from bidding. DFCM shall not be responsible for incorrect information obtained by contractors from sources other than official addenda issued by DFCM.

**5. Financial Responsibility of Contractors, Subcontractors and Sub-subcontractors**

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the Contractor, Subcontractor or Sub-subcontractor. Failure to respond may result in suspension from DFCM's list of pre-qualified contractors.

**6. Licensure**

The Contractor shall comply with and require all of its Subcontractors to comply with the license laws as required by the State of Utah.

**7. Time is of the Essence**

Time is of the essence in regard to all the requirements of the contract documents.

**8. Bids**

Before submitting a bid, each bidder shall carefully examine the contract documents; shall visit the site of the work; shall fully inform themselves as to all existing conditions and limitations; and shall include in the bid the cost of all items required by the contract documents including those added via addenda. If the bidder observes that portions of the contract documents are at variance with applicable laws, building codes, rules, regulations or contain obvious erroneous or uncoordinated information, the bidder shall promptly notify the DFCM Project Manager prior to the bidding deadline. Changes necessary to correct these issues will be made via addenda issued by DFCM.

The bid, bearing original signatures, must be typed or handwritten in ink on the Bid Form provided in the procurement documents and submitted in a sealed envelope at the location specified by the Invitation to Bid prior to the published deadline for the submission of bids.

Bid bond security, in the amount of five percent (5%) of the bid, made payable to the Division of Facilities Construction and Management, shall accompany bid. **THE BID BOND MUST BE ON THE BID BOND FORM PROVIDED IN THE PROCUREMENT DOCUMENTS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID.**

If the bid bond security is submitted on a form other than DFCM's required bid bond form, and the bid security meets all other legal requirements, the bidder will be allowed to provide an acceptable bid bond by the close of business on the next business day following notification by DFCM of submission of a defective bid bond security. **A cashier's check cannot be used as a substitute for a bid bond.**

**9. Listing of Subcontractors**

Listing of Subcontractors shall be as summarized in the "Instructions and Subcontractor's List Form", included as part of the contract documents. The subcontractors list shall be delivered to DFCM or faxed to DFCM at (801)538-3677 within 24 hours of the bid opening. Requirements for listing additional subcontractors will be listed in the contract documents.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements may be suspended from DFCM's list of pre-qualified contractors.

**10. Contract and Bond**

The Contractor's Agreement will be in the form provided in this document. The duration of the contract shall be for the time indicated by the project completion deadline shown on the schedule. The successful bidder, simultaneously with the execution of the Contractor's Agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the procurement documents. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the Contract Sum and secured from a company that meets the requirements specified in the requisite forms. Any bonding requirements for Subcontractors will be specified in the Supplementary General Conditions.

**11. Award of Contract**

The Contract will be awarded as soon as possible to the lowest, responsive and responsible bidder, based on the lowest combination of base bid and acceptable prioritized alternates, provided the bid is reasonable, is in the interests of DFCM to accept and after applying the Utah Preference Laws in U.C.A. Title 63, Chapter 56. DFCM reserves the right to waive any technicalities or formalities in any bid or in the bidding. Alternates will be accepted on a prioritized basis with Alternate 1 being highest priority, Alternate 2 having second priority, etc. Alternates will be selected in prioritized order up to the construction cost estimate.

**12. Right to Reject Bids**

DFCM reserves the right to reject any or all Bids.

**13. Withdrawal of Bids**

Bids may be withdrawn on written request received from bidders within 24 hours after the bid opening if the contractor has made an error in preparing the bid.

**14. DFCM Contractor Performance Rating**

As a contractor completes each project, DFCM will evaluate project performance based on the enclosed “DFCM Contractor Performance Rating” form. The ratings issued on this project may affect the firm’s “pre-qualified” status and their ability to obtain future work with DFCM.

**Division of Facilities Construction and Management****Stage II  
PROJECT SCHEDULE**

<b>PROJECT NAME: FIRE SYSTEMS UPGRADE - REGION 3</b> <b>DEPARTMENT OF TRANSPORTATION – OREM, UTAH</b> <b>DFCM PROJECT # 05233900</b>				
<b>Event</b>	<b>Day</b>	<b>Date</b>	<b>Time</b>	<b>Place</b>
Stage II Bidding Documents Available	Thursday	July 6, 2006	4:00 PM	DFCM 4110 State Office Building SLC, UT and DFCM web site*
Mandatory Pre-bid Site Meeting	Tuesday	July 11, 2006	11:00 AM	UDOT Region 3 658 North 1500 West Orem Utah
Deadline for Submitting Questions	Monday	July 17, 2006	4:00 PM	DFCM 4110 State Office Building SLC, UT
Final Addendum Issued	Thursday	July 20, 2006	4:00 PM	DFCM web site*
Prime Contractors Turn in Bid and Bid Bond / Bid Opening in DFCM Conference Room	Wednesday	July 26, 2006	3:00 PM	DFCM 4110 State Office Building SLC, UT
Subcontractors List Due	Thursday	July 27, 2006	3:00 PM	DFCM 4110 State Office Building SLC, UT
Project Completion Deadline	Wednesday	January 10, 2007		

\* DFCM's web site address is <http://dfcm.utah.gov>

**Division of Facilities Construction and Management****BID FORM**

NAME OF BIDDER \_\_\_\_\_ DATE \_\_\_\_\_

To the Division of Facilities Construction and Management  
4110 State Office Building  
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the Request for Bids for the **FIRE SYSTEMS UPGRADE – REGION 3 – DEPARTMENT OF TRANSPORTATION – OREM, UTAH DFCM PROJECT NO. 05233900** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: \_\_\_\_\_

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

\_\_\_\_\_ DOLLARS (\$\_\_\_\_\_) (In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by **January 10, 2007** should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$250.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of \_\_\_\_\_

The undersigned Contractor's License Number for Utah is \_\_\_\_\_.

BID FORM  
PAGE NO. 2

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract. The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable 100% Performance and Payment bonds are not delivered within time set forth.

Type of Organization: \_\_\_\_\_  
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

\_\_\_\_\_

Respectfully submitted,

\_\_\_\_\_  
Name of Bidder

ADDRESS:

\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
Authorized Signature

# BID BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

## KNOW ALL PERSONS BY THESE PRESENTS:

That \_\_\_\_\_ hereinafter referred to as the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_ and authorized to transact business in this State and U. S. Department of the Treasury Listed, (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the STATE OF UTAH, hereinafter referred to as the "Obligee," in the amount of \$ \_\_\_\_\_ (5% of the accompanying bid), being the sum of this Bond to which payment the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

**THE CONDITION OF THIS OBLIGATION IS SUCH** that whereas the Principal has submitted to Obligee the accompanying bid incorporated by reference herein, dated as shown, to enter into a contract in writing for the \_\_\_\_\_ Project.

**NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH**, that if the said principal does not execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the principal, then the sum of the amount stated above will be forfeited to the State of Utah as liquidated damages and not as a penalty; if the said principal shall execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the Principal, then this obligation shall be null and void. It is expressly understood and agreed that the liability of the Surety for any and all defaults of the Principal hereunder shall be the full penal sum of this Bond. The Surety, for value received, hereby stipulates and agrees that obligations of the Surety under this Bond shall be for a term of sixty (60) days from actual date of the bid opening.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the above bounden parties have executed this instrument under their several seals on the date indicated below, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

**DATED** this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

**Principal's name and address (if other than a corporation):**

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

**Principal's name and address (if a corporation):**

\_\_\_\_\_  
\_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_  
(Affix Corporate Seal)

**Surety's name and address:**

\_\_\_\_\_  
\_\_\_\_\_

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ ) ss.

By: \_\_\_\_\_  
Attorney-in-Fact (Affix Corporate Seal)

On this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.  
My Commission Expires: \_\_\_\_\_  
Resides at: \_\_\_\_\_

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

NOTARY PUBLIC

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

**Division of Facilities Construction and Management****INSTRUCTION AND SUBCONTRACTORS LIST FORM**

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of **ALL** first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, on the following basis:

**PROJECTS UNDER \$500,000 - ALL SUBS \$20,000 OR OVER MUST BE LISTED**  
**PROJECTS \$500,000 OR MORE - ALL SUBS \$35,000 OR OVER MUST BE LISTED**

- Any additional subcontractors identified in the bid documents shall also be listed.
- The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
- List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
- Bidder may not list more than one subcontractor to perform the same work.
- Bidder must list "Self" if performing work itself.

**LICENSURE:**

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

**BIDDER LISTING 'SELF' AS PERFORMING THE WORK:**

Any bidder that is properly licensed for the particular work and intends to perform that work itself in lieu of a subcontractor that would otherwise be required to be on the subcontractor list, must insert the term 'Self' for that category on the subcontractor list form. Any listing of 'Self' on the sublist form shall also include the amount allocated for that work.

**'SPECIAL EXCEPTION':**

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A. Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

## INSTRUCTIONS AND SUBCONTRACTORS LIST FORM

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### **GROUND FOR DISQUALIFICATION:**

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

### **CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:**

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

- (1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
- (2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
- (3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
- (4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
- (5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
- (6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

### **EXAMPLE:**

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONT. LICENSE #
ELECTRICAL	ABCD Electric Inc.	\$350,000.00	123456789000
LANDSCAPING	"Self"	300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: 350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

**PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS  
SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.**

**Division of Facilities Construction and Management****SUBCONTRACTORS LIST  
FAX TO 801-538-3677****PROJECT TITLE:** \_\_\_\_\_**Caution:** You must read and comply fully with instructions.

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONT. LICENSE #

We certify that:

1. This list includes all subcontractors as required by the instructions, including those related to the base bid as well as any alternates.
2. We have listed "Self" or "Special Exception" in accordance with the instructions.
3. All subcontractors are appropriately licensed as required by State law.

FIRM: \_\_\_\_\_

DATE: \_\_\_\_\_

SIGNED BY: \_\_\_\_\_

**NOTICE:** FAILURE TO SUBMIT THIS FORM, PROPERLY COMPLETED AND SIGNED, AS REQUIRED IN THESE CONTRACT DOCUMENTS, SHALL BE GROUNDS FOR DFCMS REFUSAL TO ENTER INTO A WRITTEN CONTRACT WITH BIDDER. ACTION MAY BE TAKEN AGAINST BIDDERS BID BOND AS DEEMED APPROPRIATE BY DFCM. ATTACH A SECOND PAGE IF NECESSARY.

# **FUGITIVE DUST PLAN**

The Contractor will fill out the form and file the original with the Division of Air Quality and a copy of the form with the Division of Facilities Construction & Management, prior to the issuance of any notice to proceed.

The Contractor will be fully responsible for compliance with the Fugitive Dust Control Plan, including the adequacy of the plan, any damages, fines, liability, and penalty or other action that results from noncompliance.

**Utah Division of Air Quality**

*April 20, 1999*

**GUIDANCE THAT MUST BE CONSIDERED IN DEVELOPING AND SUBMITTING A  
DUST CONTROL PLAN FOR COMPLIANCE WITH R307-309-3, 4, 5, 6, 7**

Source Information:

1. Name of your operation (source): provide a name if the source is a construction site.
2. Address or location of your operation or construction site.
3. UTM coordinates or Longitude/Latitude of stationary emission points at your operation.
4. Lengths of the project, if temporary (time period).
5. Description of process (include all sources of dust and fugitive dust). Please, if necessary, use additional sheets of paper for this description. Be sure to mark it as an attachment.
6. Type of material processed or disturbed.
7. Amount of material processed (tons per year, tons per month, lbs./hr., and applicable units).

8. Destination of product (where will the material produced be used or transported, be specific, provide address or specific location), information needed for temporary relocation applicants.
9. Identify the individual who is responsible for the implementation and maintenance of fugitive dust control measures. List name(s), position(s) and telephone number(s).
10. List, and attach copies of any contract lease, liability agreement with other companies that may, or will, be responsible for dust control on site or on the project.

**Description of Fugitive Dust Emission Activities**  
**(Things to consider in addressing fugitive dust control strategies.)**

1. Type of activities (drilling and blasting, road construction, development construction, earth moving and excavation, handling and hauling materials, cleaning and leveling, etc).
2. List type of equipment generating the fugitive dust.
3. Diagram the location of each activity or piece of equipment on site. Please attach the diagram.
4. Provide pictures or drawings of each activity. Include a drawing of the unpaved/paved road network used to move loads “on” and “off” property.
5. Vehicle miles travels on unpaved roads associated with the activity (average speed).
6. Type of dust emitted at each source (coal, cement, sand, soil, clay, dust, etc.)
7. Estimate the size of the release area at which the activity occurs (square miles). For haul or dirt roads include total miles of road in use during the activity.

## **Description of Fugitive Dust Emission Controls on Site**

Control strategies must be designed to meet 20% opacity or less on site (a lesser opacity may be defined by Approval Order conditions or federal requirements such as NSPS), and control strategies must prevent exceeding 10% opacity from fugitive dust at the property boundary (site boundary) for compliance with R307-309-3.

1. Types of ongoing emission controls proposed for each activity, each piece of equipment, and haul roads.
2. Types of additional dust controls proposed for bare, exposed surfaces (chemical stabilization, synthetic cover, wind breaks, vegetative cover, etc).
3. Method of application of dust suppressant.
4. Frequency of application of dust suppressant.
5. Explain what triggers the use of a special control measure other than routine measures already in place, such as covered loads or measures covered by a permit condition (increase in opacity, high winds, citizen complaints, dry conditions, etc).
6. Explain in detail what control strategies/measures will be implemented off-hours, i.e., Saturdays/Sundays/Holidays, as well as 6 PM to 6 AM each day.

## **Description of Fugitive Dust Control Off-site**

Prevent, to the maximum extent possible, deposition of materials, which may create fugitive dust on public and private paved roads in compliance with R307-309-5, 6, 7.

1. Types of emission controls initiated by your operation that are in place “off” property (application of water, covered loads, sweeping roads, vehicle cleaning, etc.).
  
2. Proposed remedial controls that will be initiated promptly if materials, which may create fugitive dust, are deposited on public and private paved roads.

Submit the Dust Control Plan to:

Executive Secretary  
Utah Air Quality Board  
POB 144820  
15 North 1950 West  
Salt Lake City, Utah 84114-4820

Phone: (801) 536-4000  
FAX: (801) 536-4099

## **Fugitive Dust Control Plan Violation Report**

When a source is found in violation of R307-309-3 or in violation of the Fugitive Dust Control Plan, the source must submit a report to the Executive Secretary within 15 days after receiving a Notice of Violation. The report must include the following information:

1. Name and address of dust source.
2. Time and duration of dust episode.
3. Meteorological conditions during the dust episode.
4. Total number and type of fugitive dust activities and dust producing equipment within each operation boundary. If no change has occurred from the existing dust control plan, the source should state that the activity/equipment is the same.
5. Fugitive dust activities or dust producing equipment that caused a violation of R-307-309-3 or the source's dust control plan.
6. Reasons for failing to control dust from the dust generating activity or equipment.
7. New and/or additional fugitive dust control strategies necessary to achieve compliance with R307-309-3, 4, 5, 6, or 7.
8. If it can not be demonstrated that the current approved Dust Control Plan can result in compliance with R307-309-3 through 7, the Dust Control Plan must be revised so as to demonstrate compliance with 307-309-3 through 7. Within 30 days of receiving a fugitive dust Notice of Violation, the source must submit the revised Plan to the Executive Secretary for review and approval.

Submit the Dust Control Plan to:

Executive Secretary	Phone: (801) 536-4000
Utah Air Quality Board	FAX: (801) 536-4099
POB 144820	
15 North 1950 West	
Salt Lake City, Utah 84114-4820	

Attachments: DFCM Form FDR R-307-309, Rule 307-309

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## CONTRACTOR'S AGREEMENT

FOR:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

THIS CONTRACTOR'S AGREEMENT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 20\_\_, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and \_\_\_\_\_, incorporated in the State of \_\_\_\_\_ and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is \_\_\_\_\_.

WITNESSETH: WHEREAS, DFCM intends to have Work performed at \_\_\_\_\_.

WHEREAS, Contractor agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and Contractor for the consideration provided in this Contractor's Agreement, agree as follows:

**ARTICLE 1. SCOPE OF WORK.** The Work to be performed shall be in accordance with the Contract Documents prepared by \_\_\_\_\_ and entitled "\_\_\_\_\_"

The DFCM General Conditions ("General Conditions") dated May 25, 2005 on file at the office of DFCM and available on the DFCM website, are hereby incorporated by reference as part of this Agreement and are included in the specifications for this Project. All terms used in this Contractor's Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions.

The Contractor Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the Contractor to the DFCM hereunder is that of an independent Contractor.

**ARTICLE 2. CONTRACT SUM.** The DFCM agrees to pay and the Contractor agrees to accept in full performance of this Contractor's Agreement, the sum of \_\_\_\_\_ DOLLARS AND NO CENTS (\$\_\_\_\_\_.00), which is the base bid, and which sum also includes the cost of a 100%

CONTRACTOR'S AGREEMENT  
PAGE NO. 2

Performance Bond and a 100% Payment Bond as well as all insurance requirements of the Contractor. Said bonds have already been posted by the Contractor pursuant to State law. The required proof of insurance certificates have been delivered to DFCM in accordance with the General Conditions before the execution of this Contractor's Agreement.

**ARTICLE 3. TIME OF COMPLETION AND DELAY REMEDY.** The Work shall be Substantially Complete within \_\_\_\_\_ (\_\_\_\_) calendar days after the date of the Notice to Proceed. Contractor agrees to pay liquidated damages in the amount of \$\_\_\_\_\_ per day for each day after expiration of the Contract Time until the Contractor achieves Substantial Completion in accordance with the Contract Documents, if Contractor's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Contractor's Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No action shall be maintained by the Contractor, including its or Subcontractor or suppliers at any tier, against the DFCM or State of Utah for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions. The Contractor may receive a written extension of time, signed by the DFCM, in which to complete the Work under this Contractor's Agreement in accordance with the General Conditions.

**ARTICLE 4. CONTRACT DOCUMENTS.** The Contract Documents consist of this Contractor's Agreement, the Conditions of the Contract (DFCM General Conditions, Supplementary and other Conditions), the Drawings, Specifications, Addenda and Modifications. The Contract Documents shall also include the bidding documents, including the Notice to Contractors, Instructions to Bidders/Proposers and the Bid/Proposal, to the extent not in conflict therewith and other documents and oral presentations that are documented as an attachment to the contract.

All such documents are hereby incorporated by reference herein. Any reference in this Contractor's Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

**ARTICLE 5. PAYMENT.** The DFCM agrees to pay the Contractor from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The Contractor agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the

CONTRACTOR'S AGREEMENT  
PAGE NO. 3

Contractor requests payment and agrees to safeguard and protect such equipment or materials and is responsible for safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the Contractor at the time of request for Certificate of Payment on account. Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. The retainage, including any additional retainage imposed and the release of any retainage, shall be in accordance with UCA 13-8-5 as amended. Contractor shall also comply with the requirements of UCA 13-8-5, including restrictions of retainage regarding subcontractors and the distribution of interest earned on the retention proceeds. The DFCM shall not be responsible for enforcing the Contractor's obligations under State law in fulfilling the retention law requirements with subcontractors at any tier.

**ARTICLE 6. INDEBTEDNESS.** Before final payment is made, the Contractor must submit evidence satisfactory to the DFCM that all payrolls, materials bills, subcontracts at any tier and outstanding indebtedness in connection with the Work have been properly paid. Final Payment will be made after receipt of said evidence, final acceptance of the Work by the DFCM as well as compliance with the applicable provisions of the General Conditions.

Contractor shall respond immediately to any inquiry in writing by DFCM as to any concern of financial responsibility and DFCM reserves the right to request any waivers, releases or bonds from Contractor in regard to any rights of Subcontractors (including suppliers) at any tier or any third parties prior to any payment by DFCM to Contractor.

**ARTICLE 7. ADDITIONAL WORK.** It is understood and agreed by the parties hereto that no money will be paid to the Contractor for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and the Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this Contractor's Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

**ARTICLE 8. INSPECTIONS.** The Work shall be inspected for acceptance in accordance with the General Conditions.

**ARTICLE 9. DISPUTES.** Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

**ARTICLE 10. TERMINATION, SUSPENSION OR ABANDONMENT.** This Contractor's Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

**ARTICLE 11. DFCM'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE USE THEREOF.** The DFCM may withhold from payment to the Contractor such amount as, in DFCM's judgment, may be necessary to pay just claims against the Contractor or Subcontractor at any tier for labor and services rendered and materials furnished in and about the Work. The DFCM may apply such withheld amounts for the payment of such claims in DFCM's discretion. In so doing, the DFCM shall be deemed the agent of Contractor and payment so made by the DFCM shall be considered as payment made under this Contractor's Agreement by the DFCM to the Contractor. DFCM shall not be liable to the Contractor for any such payment made in good faith. Such withholdings and payments may be made without prior approval of the Contractor and may be also be prior to any determination as a result of any dispute, PRE, Claim or litigation.

**ARTICLE 12. INDEMNIFICATION.** The Contractor shall comply with the indemnification provisions of the General Conditions.

**ARTICLE 13. SUCCESSORS AND ASSIGNMENT OF CONTRACT.** The DFCM and Contractor, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Contractor's Agreement. The Contractor shall not assign this Contractor's Agreement without the prior written consent of the DFCM, nor shall the Contractor assign any moneys due or to become due as well as any rights under this Contractor's Agreement, without prior written consent of the DFCM.

**ARTICLE 14. RELATIONSHIP OF THE PARTIES.** The Contractor accepts the relationship of trust and confidence established by this Contractor's Agreement and covenants with the DFCM to cooperate with the DFCM and A/E and use the Contractor's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

**ARTICLE 15. AUTHORITY TO EXECUTE AND PERFORM AGREEMENT.** Contractor and DFCM each represent that the execution of this Contractor's Agreement and the performance thereunder is within their respective duly authorized powers.

**ARTICLE 16. ATTORNEY FEES AND COSTS.** Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this Contractor's Agreement or recover damages or any other action as a result of a breach thereof.

CONTRACTOR'S AGREEMENT  
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**IN WITNESS WHEREOF**, the parties hereto have executed this Contractor's Agreement on the day and year stated hereinabove.

**CONTRACTOR:** \_\_\_\_\_

\_\_\_\_\_  
Signature Date

Title: \_\_\_\_\_

State of \_\_\_\_\_ )  
County of \_\_\_\_\_ )

\_\_\_\_\_  
Please type/print name clearly

On this \_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me, \_\_\_\_\_, whose identity is personally known to me (or proved to me on the basis of satisfactory evidence) and who by me duly sworn (or affirmed), did say that he (she) is the \_\_\_\_\_ (title or office) of the firm and that said document was signed by him (her) in behalf of said firm.

(SEAL)

\_\_\_\_\_  
**Notary Public**

My Commission Expires \_\_\_\_\_

APPROVED AS TO AVAILABILITY  
OF FUNDS:

\_\_\_\_\_  
Financial Manager, Date  
Division of Facilities Construction  
and Management

**DIVISION OF FACILITIES  
CONSTRUCTION AND MANAGEMENT**

\_\_\_\_\_  
Manager - Date  
Capital \_\_\_\_\_

APPROVED AS TO FORM:  
ATTORNEY GENERAL  
May 25, 2005  
By: Alan S. Bachman  
Asst Attorney General

APPROVED FOR EXPENDITURE:

\_\_\_\_\_  
Division of Finance Date

**PERFORMANCE BOND**  
(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That \_\_\_\_\_ hereinafter referred to as the "Principal" and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_, with its principal office in the City of \_\_\_\_\_ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_, for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which Contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**PRINCIPAL:**

\_\_\_\_\_

By: \_\_\_\_\_  
(Seal)

Title: \_\_\_\_\_

**WITNESS OR ATTESTATION:**

\_\_\_\_\_

**SURETY:**

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-in-Fact (Seal)

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires: \_\_\_\_\_

Resides at: \_\_\_\_\_

\_\_\_\_\_  
NOTARY PUBLIC

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

## PAYMENT BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

### KNOW ALL PERSONS BY THESE PRESENTS:

That \_\_\_\_\_ hereinafter referred to as the "Principal," and \_\_\_\_\_, a corporation organized and existing under the laws of the State of \_\_\_\_\_ authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of \_\_\_\_\_, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

**WHEREAS**, the Principal has entered into a certain written Contract with the Obligee, dated the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, to construct \_\_\_\_\_ in the County of \_\_\_\_\_, State of Utah, Project No. \_\_\_\_\_ for the approximate sum of \_\_\_\_\_ Dollars (\$ \_\_\_\_\_), which contract is hereby incorporated by reference herein.

**NOW, THEREFORE**, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, 1953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

**PROVIDED, HOWEVER**, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

**IN WITNESS WHEREOF**, the said Principal and Surety have signed and sealed this instrument this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

### WITNESS OR ATTESTATION:

### PRINCIPAL:

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_  
(Seal)

Title: \_\_\_\_\_

### WITNESS OR ATTESTATION:

### SURETY:

\_\_\_\_\_

\_\_\_\_\_

By: \_\_\_\_\_  
Attorney-in-Fact (Seal)

STATE OF \_\_\_\_\_ )  
 ) ss.  
COUNTY OF \_\_\_\_\_ )

On this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, personally appeared before me \_\_\_\_\_, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

My commission expires: \_\_\_\_\_

Resides at: \_\_\_\_\_

NOTARY PUBLIC

**Agency:** \_\_\_\_\_  
**Agent:** \_\_\_\_\_  
**Address:** \_\_\_\_\_  
**Phone:** \_\_\_\_\_

Approved As To Form: May 25, 2005  
By Alan S. Bachman, Asst Attorney General

**Division of Facilities Construction and Management****CHANGE ORDER #** \_\_\_\_\_

CONTRACTOR: \_\_\_\_\_

AGENCY OR INSTITUTION: \_\_\_\_\_

PROJECT NAME: \_\_\_\_\_

PROJECT NUMBER: \_\_\_\_\_

CONTRACT NUMBER: \_\_\_\_\_

ARCHITECT: \_\_\_\_\_

DATE: \_\_\_\_\_

CONSTRUCTION CHANGE DIRECTIVE NO.	PROPOSAL REQUEST NO.	AMOUNT		DAYS	
		INCREASE	DECREASE	INCREASE	DECREASE

	Amount	Days	Date
ORIGINAL CONTRACT			
TOTAL PREVIOUS CHANGE ORDERS			
TOTAL THIS CHANGE ORDER			
ADJUSTED CONTRACT			

DFCM and Contractor agree that the terms, contract sum, scope of the Work and time specified in this Change Order shall constitute the full accord and satisfaction, and complete adjustment to the Contract and includes all direct and indirect costs and effects related to, incidental to, and/or reasonably implied from such change in the contract terms, sum, scope of the Work and time.

Contractor: \_\_\_\_\_

Date

Architect/Engineer: \_\_\_\_\_

Date

Agency or Institution: \_\_\_\_\_

Date

DFCM: \_\_\_\_\_

Date

Funding Verification: \_\_\_\_\_

Date

Page \_\_\_\_ of \_\_\_\_ page(s)

**CERTIFICATE OF SUBSTANTIAL COMPLETION**

PROJECT \_\_\_\_\_ PROJECT NO: \_\_\_\_\_

AGENCY/INSTITUTION \_\_\_\_\_

AREA ACCEPTED \_\_\_\_\_

The Work performed under the subject Contract has been reviewed on this date and found to be Substantially Completed as defined in the General Conditions; including that the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the State of Utah can occupy the Project or specified area of the Project for the use for which it is intended.

The DFCM - (Owner) accepts the Project or specified area of the Project as Substantially Complete and will assume full possession of the Project or specified area of the Project at \_\_\_\_\_ (time) on \_\_\_\_\_ (date).

The DFCM accepts the Project for occupancy and agrees to assume full responsibility for maintenance and operation, including utilities and insurance, of the Project subject to the itemized responsibilities and/or exceptions noted below:

The Owner acknowledges receipt of the following closeout and transition materials:

☐ Record Drawings      ☐ O & M Manuals      ☐ Warranty Documents      ☐ Completion of Training Requirements

A list of items to be completed or corrected (Punch List) is attached hereto. The failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents, including authorized changes thereof. The amount of \_\_\_\_\_. (Twice the value of the punch list work) shall be retained to assure the completion of the punch list work.

The Contractor shall complete or correct the Work on the list of (Punch List) items appended hereto within \_\_\_\_\_ calendar days from the above date of issuance of this Certificate. If the list of items is not completed within the time allotted the Owner has the right to be compensated for the delays and/or complete the work with the help of independent contractor at the expense of the retained project funds. If the retained project funds are insufficient to cover the delay/completion damages, the Owner shall be promptly reimbursed for the balance of the funds needed to compensate the Owner.

\_\_\_\_\_  
CONTRACTOR (include name of firm)      by: \_\_\_\_\_  
(Signature)      DATE

\_\_\_\_\_  
A/E (include name of firm)      by: \_\_\_\_\_  
(Signature)      DATE

\_\_\_\_\_  
USING INSTITUTION OR AGENCY      by: \_\_\_\_\_  
(Signature)      DATE

\_\_\_\_\_  
DFCM (Owner)      by: \_\_\_\_\_  
(Signature)      DATE

4110 State Office Building, Salt Lake City, Utah 84114  
telephone 801-538-3018 • facsimile 801-538-3267 • <http://dfcm.utah.gov>

cc: Parties Noted  
DFCM, Director

## SECTION 13851 - FIRE ALARM SYSTEM

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and General Requirements, apply to the work specified in this section.

#### 1.2 DESCRIPTION OF WORK

- A. This section of the specifications includes the installation of a fire alarm system for the Administration, Materials Laboratory, Heavy Equipment/Paint Storage and Warehouse/Shop buildings at the UDOT Region 3 complex in Orem, UT. Fire alarm system shall include, but not be limited to, installation of addressable FACP in Administration building, installation of alarm initiating devices in all buildings, installation of a signaling line circuit from FACP to initiating devices using existing buried conduits between buildings provided by owner, installation of new alarm notification appliances, notification appliance circuits and power supplies, installation of auxiliary control devices and relays and wiring as shown on the drawings and specified herein.

#### 1.3 QUALITY ASSURANCE

- A. The fire alarm system shall comply with requirements of NFPA 72 (National Fire Alarm Code) for Local Protected Premises Signaling Systems except as modified and supplemented by this specification.
- B. All initiating devices shall be listed compatible with the control equipment used.
- C. Materials, devices and equipment shall be Underwriters Laboratories (UL) listed or Factory Mutual approved for use in fire alarm systems and shall comply with all applicable requirements of the following UL standards:
  - 1. UL 38 Manually Actuated Signaling Boxes
  - 2. UL 50 Cabinets and Boxes
  - 3. UL 864 Control Units for Fire Protective Signaling Systems
  - 4. UL 268 Smoke Detectors for Fire Protective Signaling Systems
  - 5. UL 464 Audible Signaling Appliances
  - 6. UL 521 Heat Detectors for Fire Protective Signaling Systems
  - 7. UL 1971 Visual Notification Appliances
- D. Shop drawings shall be prepared by an engineering technician or senior engineering technician (Level III or Level IV) NICET certified for fire alarm design. Include NICET certification number on the drawings. Drawings will be signed by the technician and submitted for approval under his name.
- E. Fire alarm contractor shall be licensed as a fire alarm contractor in the State of Utah. License shall be active throughout the duration of the project.

- F. Major system components (control panels, initiating devices, addressable modules or relays, etc.) shall be manufactured by a State of Utah DFCM approved manufacturer
- G. State of Utah DFCM Approved Manufacturers:
  - 1. Fire-Lite
  - 2. Silent Knight

#### 1.4 SUBMITTALS

- A. Descriptive Data: Descriptive data shall be submitted on the following items of material and/or equipment. Such data shall consist of manufacturer's or supplier's catalog information in sufficient detail to allow verification that the material and/or equipment meets the specification requirements, or is equal to that specified.
  - 1. Fire alarm control panel.
  - 2. Annunciator panel
  - 3. Initiating devices (smoke detectors, heat detectors, manual pull stations, monitor modules etc.)
  - 4. Relay modules to control protected premise fire safety functions.
  - 5. Notification appliances
- B. Shop Drawings: Prior to ordering or installing any equipment, contractor shall prepare shop drawings for submittal to Owner/Engineer. Shop drawings shall include sufficient information, clearly presented, to determine compliance with drawings and specifications. Include manufacturer's name(s), model numbers, ratings, power requirements, equipment layout, device arrangement, complete wiring point-to-point diagrams, and conduit layouts.
- C. Submit four sets of drawings, descriptive data, battery calculations and voltage drop calculations to the Owner/Engineer for review. After review and acceptance by the Owner/Engineer, submit to State Fire Marshal for review. Any review comments, and associated drawing revisions, from state or local approving authorities that affect the system design shall be approved by the Owner/Engineer prior to installation.
- D. Testing Documentations/Certificates: Upon completion of installation submit to Engineer two copies of all material and test certificates.
- E. As-Built Drawings: A complete set of reproducible "as-built" drawings showing device addresses, installed wiring, color coding, and wire tag notations for exact locations of all installed equipment, specific interconnections between all equipment, and internal wiring of the equipment shall be delivered to the owner upon completion of system.
- F. O&M Manuals: Operating and instruction manuals shall be submitted prior to testing of the system. Three (3) complete sets of operating and instruction manuals shall be delivered to the owner upon completion. User operating instructions shall be provided prominently displayed on a separate sheet located next to the control unit in accordance with U.L. Standard 864. Include a CD with all FACP programming information with the O&M Manuals.

#### 1.5 SYSTEM DESCRIPTION

- A. Contractor shall furnish and install a single addressable FACP for entire building complex in Administration Building where indicated on the plans. FACP shall be Silent Knight model 5820XL or Fire-Lite MS-9600 with DACT-UD. FACP shall have integrated signaling line circuits (SLC) with sufficient capacity for all initiating devices and control modules required with an additional reserve of 20% unused addresses for future expansion. Provide telephone circuits to integrated DACT of control panel for off-premise monitoring, signaling line circuits, initiating device circuits, notification appliance circuits and power supplies in order to provide a complete fire alarm system in accordance with NFPA 72 and the drawings.
- B. Install fire alarm annunciator (key pad with alphanumeric readout) at main entrance of Administration building.
- C. Signaling line circuits: Provide signaling line circuit from addressable FACP to all initiating devices in each building. SLC circuit between building shall be placed in existing buried conduit provided by owner. Provide transient voltage surge suppression in accordance with NFPA 70 where circuit enters and/or exits a building. Total length of SLC shall not exceed recommendations of fire alarm panel manufacturer. Provide SLC circuit signal boosters or additional SLC circuits as required. SLC shall conform to requirements for Class A Style 6. Initiating devices include the following:
  - 1. Smoke detectors: Provide addressable smoke detectors in all corridors, lobbies, elevator equipment room and above all fire alarm control equipment.
  - 2. Heat detectors: Provide addressable heat detectors in elevator equipment room and bottom of elevator shaft as indicated on plans. Install heat detectors adjacent to fire sprinklers and provide relay and shunt trip breaker to disconnect power to electrical equipment upon activation of either heat detector.
  - 3. Manual pull stations: Install manual fire alarm pull stations at each building exit as indicated on drawings. Mount pull stations at 48" above the floor on recessed type junction boxes with conduit concealed in wall.
  - 4. Addressable monitor modules: Furnish and install modules to facilitate monitoring of existing conventional water flow switches and valve tamper switches.
- D. Notification Appliances/Circuits: Provide audible and visible notification throughout each building as indicated on drawings.
  - 1. Notification circuits in Administration Building shall be controlled and powered by FACP.
  - 2. Provide a remote notification circuit power supply in the Material laboratory, Heavy Equipment/Paint Storage and Warehouse/Shop buildings to control and provide power to notification appliance circuits in those buildings.
  - 3. Provide programmable control relay at each notification power supply to provide activation of notification appliance circuits.
  - 4. Notification circuits in each building shall be zoned such that appliance operate upon activation of fire alarm initiating device in that building only.
- E. Provide relay modules as indicated on the project drawings and specified below to provide the following protected premise fire safety functions. The number and location for relays shall be determined by contractor:
  - 1. Activation of notification appliances.
  - 2. Elevator recall
  - 3. Elevator power disconnect
  - 4. Fire/smoke damper closure

- F. Contractor shall provide new power circuit to fire alarm control panel. New power circuit shall conform to all applicable requirements of NFPA 70 and 72.

## 1.6 SYSTEM DESIGN

### A. Basic Performance:

1. Initiating Device Circuits (IDC) shall be new and shall be wired Class A Style D.
2. Notification appliance circuits (NAC) shall be wired Class A Style Z.
3. Signaling line circuit (SLC) shall be wired Class A Style 6 or 7.
4. All circuits shall be power-limited, per 1995 UL864 requirements.
5. Single ground fault or open circuit shall not cause system malfunction, loss of operating power or the ability to report an alarm.
6. Alarm signals arriving at the main FACP shall not be lost following a primary power failure or outage of any kind until the alarm signal is processed and recorded.

### B. Basic System Functional Operation: When a fire alarm condition is detected and reported by one of the system initiating devices, the following functions shall immediately occur:

1. The system Alarm LED at the FACP corresponding to the zone in alarm shall be illuminated.
2. A local sounder with the control panel shall sound.
3. LCD display on the FACP and remote annunciator shall indicate device address and description of device in alarm including its location within the protected premises.
4. In response to a fire alarm condition, the system will process all control programming and activate all system outputs (alarm notification appliances and/or relays) associated with the point in alarm.
5. Alarm signal shall be transmitted off-premise via the DACT to the central monitoring station selected by the owner.

### C. All wiring shall be free of opens, shorts and grounds. All wiring shall be installed in minimum 3/4" rigid conduit or EMT. 3/4" minimum flex conduit may be used for drops to single devices (less than 5') All penetrations through rated partitions shall be fire stopped with a suitable caulking compound. All wiring (except new power distribution circuits) shall be fire power limited (FPL) with minimum 300V insulation or equivalent complying with NFPA 70 Article 760.

### D. Provide a ground fault detection circuit, to detect positive and negative grounds on all field wiring. The ground fault detector shall operate the general trouble devices as specified but shall not cause an alarm to be sounded. Ground fault will not interfere with the normal operation, such as alarm, or other trouble conditions.

### E. All low voltage circuits will be protected by microprocessor controlled power limiting or have self restoring polyswitches for the following: smoke detector power, main power supply, indicating appliance circuits, battery standby power and auxiliary output.

### F. Notification circuits shall be designed to limit the voltage drop to a maximum of 20% from the power supply to the most remote device on any notification circuit.

### G. All visible alarms within a single field of view shall flash in synchronization.

### H. Secondary power supply (battery backup) shall be sufficient to provide a minimum of 24 hours of standby power with an additional reserve to operate the system for 5 minutes in alarm.

## 1.7 WARRANTY

- A. The contractor shall warrant all new equipment and wiring free from inherent mechanical and electrical defects for one year (365 days) from the date of final acceptance.

## 1.8 APPLICABLE CODES AND STANDARDS

- A. The specifications and standards listed below form a part of this specification. The system shall fully comply with all applicable provisions of the latest issue of these standards.
  - 1. International Building Code – 2003 edition
  - 2. International Fire Code – 2003 edition
  - 3. International Mechanical Code – 2003 edition
  - 4. Utah State Fire Marshal Rule R710-4
  - 5. NFPA 70 - National Electrical Code – 2002 edition
  - 6. NFPA 72 - National Fire Alarm Code – 2002 edition
  - 7. NFPA 101 Life Safety Code – 2003 edition

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. All new equipment and components shall be installed in strict compliance with manufacturers' recommendations. Consult the manufacturer's installation manuals for all wiring diagrams, schematics, physical equipment sizes, etc., before beginning system installation.
- B. All equipment shall be attached to walls and ceiling/floor assemblies and shall be held firmly in place. Fasteners and supports shall be adequate to support the required load.

### 2.2 CONDUIT AND WIRE

- A. Conduit
  - 1. Conduit shall be in accordance with The National Electrical Code (NEC), local and DFCM requirements.
  - 2. Conduit fill shall not exceed 40 percent of interior cross sectional area where three or more cables are contained within a single conduit.
  - 3. Cable must be separated from any open conductors of Power, or Class 1 circuits, and shall not be placed in any conduit, junction box or raceway containing these conductors, as per NEC Article 760-29.
  - 4. Wiring for 24 volt control, alarm notification, emergency communication and similar power-limited auxiliary functions may be run in the same conduit as initiating circuits. All circuits shall be provided with transient suppression devices and the system shall be designed to permit simultaneous operation of all circuits without interference or loss of signals.
  - 5. Conduit shall not enter the fire alarm control panel, or any other remotely mounted control panel equipment or backboxes, except where conduit entry is specified by the equipment manufacturer.
  - 6. Conduit shall be 3/4 inch minimum.

7. Install conduit attached to structure by straps, staples, hangers or similar fittings designed and installed to support conduit. Installation shall conform to NFPA 70 Article 760 and 300.4.
8. Conduit shall be rigid or EMT. Flexible conduit may be used for a drop to a single device.
9. Where wiring is installed concealed above the ceiling or in truss space conduit is not required.
10. Conduit and junction boxes used for the fire alarm system shall be marked and labeled to indicate that they are part of the building fire alarm system. Conduits shall be periodically marked with red paint and labeled to indicate the circuit type and designation contained inside. Junction boxes shall be painted red.

B. Wire

1. Wiring shall be in accordance with local, state and national codes (e.g., NEC Article 760) and as recommended by the manufacturer of the fire alarm system. Number and size of conductors shall be as recommended by the fire alarm system manufacturer, but not less than 18 AWG (1.02 mm) for initiating device circuits and 14 AWG (1.63 mm) for notification appliance circuits.
2. All wire and cable shall be listed and/or approved by a recognized testing agency for use with a protective signaling system.
3. The system shall permit the use of IDC and NAC wiring in the same conduit or raceway.
4. All field wiring shall be completely supervised. In the event of a primary power failure, disconnected standby battery, removal of any internal modules, or any open circuits in the field wiring; a trouble signal will be activated until the system and its associated field wiring are restored to normal condition.
5. Terminal Boxes, Junction Boxes and Cabinets: All boxes and cabinets shall be UL listed for their use and purpose.
6. The fire alarm control panel shall be connected to a separate dedicated branch circuit, maximum 20 amperes. This circuit shall be labeled at the power distribution panel as FIRE ALARM. Fire alarm control panel primary power wiring shall be 12 AWG. The control panel cabinet shall be grounded securely to either a cold water pipe or grounding rod.

2.3 FIRE ALARM CONTROL PANEL

- A. FACP shall be either Silent Knight model 5820 XL or Fire-Lite MS-9600 with DACT-UD.
- B. The FACP must have Drift Compensation sensitivity capabilities on detectors and be capable of supporting a minimum of 127 addressable points. The communication protocol on the SLC loop must be digital.
- C. The FACP must have a built in UL approved digital communicator. The communicator must allow local and remote up/downloading of system operating options, event history, and detector sensitivity data. The FACP must automatically test the smoke detectors in compliance with NFPA standards to ensure that they are within listed sensitivity parameters and be listed with Underwriters Laboratories for this purpose.
- D. The FACP must compensate for the accumulation of contaminants that affect detector sensitivity. Maintenance alert feature (differentiated from trouble condition), detector sensitivity selection, auto-programming mode (Jumpstart) and the ability to upgrade the core operating software on site or over the telephone.

- E. The main communication bus shall be capable of class A or class B configuration with a total Bus length of not less than 6,000 feet.
- F. The main control must have a built in annunciator with a minimum 80 character LCD display and feature LED's for General alarm, Supervisory, System trouble, System silence and Power. When in the normal condition the LCD shall display time and date which is capable of automatic daylight savings time adjustments. The annunciator must be able to silence and reset alarms through the use of a keypad-entered code, or by using a firefighter key. The annunciator must have twenty levels of user codes that will allow the limitation of operating system programming to authorized individuals.
- G. Provide all necessary system expansion modules or equipment required to provide a complete and functional fire alarm system as described on the project drawings and specified herein.

2.4 NOT USED

2.5 ANNUNCIATOR PANEL

- A. Furnish and install new remote annunciator panel for the FACP where shown on the drawings. Wall mount remote annunciator at 54" AFF. Install annunciator on recessed junction box with conduit concealed in wall.
- B. LCD Remote annunciator shall have the same control and display layout so that it matches identically the built in annunciator on the FACP. LED Remote annunciator shall have individually mapped LED's and reset and silence inputs. Remote annunciator shall be capable of operating at a distance of 6000 feet from the main control panel on unshielded non-twisted cable.

2.6 DACT

- A. The digital communicator must be an integral part of the control panel and be capable of reporting all zones or points of alarm, supervisory, and trouble as well as all system status information such as loss of AC, low battery, ground fault, loss of supervision to any remote devices with individual and distinct messages to a central station or remote station. The communicator must also be capable of up/downloading of all system programming options, Event history and Sensitivity compliance information to a PC on site or at a remote location. The communicator shall have an answering machine bypass feature that will allow the panel to respond to communication even on phone lines that have other communication equipment present. The communicator must be capable of reporting via SIA and Contact ID formats. The communicator shall have a delayed AC loss report function which will provide a programmable report delay plus a 10-25 min random component to help ease traffic to the central station during a power outage.

2.7 SLC CIRCUITS

- A. Each SLC shall be capable of a wiring distance of 10,000 feet from the SLC driver module and be capable of supporting at least 100 devices. The communication protocol to SLC devices must be digital. Any SLC loop device, which goes into alarm, must interrupt the polling cycle for priority response from the FACP. The FACP must respond consistently to a device that goes

into alarm on an SLC in under 3 seconds. The SLC shall be capable of functioning in a class A or class B configuration.

## 2.8 SLC LOOP DEVICES

- A. Devices supported must include analog photoelectric smoke detectors, manual pull stations, heat detectors, contact monitoring modules and relay output modules. There is to be no limit to the number of any particular device type that can be connected to the SLC.

## 2.9 ADDRESSABLE SYSTEM DEVICES – GENERAL

- A. Addressable devices shall provide an address-setting means using rotary decimal switches.
  - 1. Addressable devices shall use simple to install and maintain address switches.
  - 2. Detectors shall be Analog and Addressable, and shall connect to the fire alarm control panel's Signaling Line Circuits.
  - 3. Addressable smoke and thermal detectors shall provide dual (2) status LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel, and both LEDs shall be placed into steady illumination by the control panel, indicating that an alarm condition has been detected.
  - 4. Using software in the FACP, detectors shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The detectors shall be listed by UL as meeting the calibrated sensitivity test requirements of NFPA Standard 72, Chapter 7.
  - 5. The detectors shall be ceiling-mount and shall include a separate twist-lock base which includes a tamper proof feature.
  - 6. The detectors shall provide a test means whereby they will simulate an alarm condition and report that condition to the control panel.
  - 7. Detectors shall also store an internal identifying type code that the control panel shall use to identify the type of device (ION, PHOTO, THERMAL)

## 2.10 PHOTOELECTRIC SMOKE DETECTOR

- A. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density. Detector shall incorporate visible LEDs that flashes to indicate normal function and is continuously illuminated to indicate alarm condition

## 2.11 THERMAL DETECTORS

- A. New thermal detectors shall be intelligent addressable devices rated at 135 degrees Fahrenheit (58 degrees Celsius) fixed temperature element and rate-of-rise element rated at 15 degrees F (9.4 degrees C) per minute. Both shall mount to a base that is connect via two wires to the fire alarm control panel signaling line circuit

## 2.12 NOT USED

## 2.13 ADDRESSABLE DRY CONTACT MONITOR MODULE

- A. Addressable monitor modules shall be provided to connect one supervised IDC zone of conventional alarm initiating devices (any N.O. dry contact device) to one of the fire alarm control panel SLC loops.
- B. The monitor module shall mount in a 4-inch square, 2-1/8 inch deep electrical box.
- C. The IDC zone shall be suitable for Class A Style D operation. An LED shall be provided (visible outside junction box) that shall flash under normal conditions, indicating that the monitor module is operational and in regular communication with the control panel

#### 2.14 ADDRESSABLE CONTROL MODULE

- A. Addressable control modules shall be provided to supervise and control the operation of one conventional NACs of compatible, 24 VDC powered, polarized audio/visual notification appliances. For fan shutdown and other auxiliary control functions, the control module may be set to operate as a dry contact relay.
- B. The control module shall mount in a standard 4-inch square, 2-1/8 inch deep electrical box, or to a surface mounted backbox.
- C. The control module NAC may be wired for Style Z (Class A) with up to 1 amp of inductive A/V signal, or 2 amps of resistive A/V signal operation, or as a dry contact (Form-C) relay. The relay coil shall be magnetically latched to reduce wiring connection requirements, and to insure that 100% of all auxiliary relay or NACs may be energized at the same time on the same pair of wires.
- D. Audio/visual power shall be provided by a separate supervised power loop from the main fire alarm control panel or from a supervised, UL listed remote power supply.
- E. The control module shall be suitable for pilot duty applications and rated for a minimum of 0.6 amps at 30 VDC.

#### 2.15 MANUAL PULL STATIONS

- A. Manual fire alarm stations shall be non-coded, single or double action type, with a key operated test reset lock in order that they may be tested, and so designed that after actual emergency operation, they cannot be restored to normal except by use of a key. The reset key shall be so designed that it will reset the manual Pull Station and open the FACP cabinet without use of another key. An operated station shall automatically condition itself so as to visually detected, as operated, at a minimum distance of fifty feet, front or side. Manual stations shall be constructed of die cast metal with clearly visible operating instructions on the front of the station in raised letters. Stations shall be suitable for surface mounting on matching back box, or semi-flush mounting on a standard single gang box, and shall be installed within the limits defined by the Americans with Disabilities Act (ADA) dependent on Manual Station accessibility or per local requirements.

#### 2.16 BATTERIES AND CHARGER

- A. Battery
  - 1. Shall be 12 volt, Gell-Cell type.

2. Battery shall have sufficient capacity to power the fire alarm system for not less than 24 hours plus 5 minutes of alarm upon a normal AC power failure.
3. The batteries are to be completely maintenance free. No liquids are required. Fluid level checks refilling, spills and leakage shall not be required.

B. Battery Charger

1. Shall be completely automatic, with constant potential charger maintaining the battery fully charged under all service conditions. Charger shall operate from a 120-volt 60 hertz source.
2. Shall be rated for fully charging a completely discharged battery within 48 hours while simultaneously supplying any loads connected to the battery.
3. Shall have protection to prevent discharge through the charger.
4. Shall have protection for overloads and short circuits on both AC and DC sides.

2.17 ENCLOSURES

- A. The control panels shall be housed in a UL listed cabinet suitable for surface or semi-flush mounting. Cabinet and front shall be corrosion protected, given a rust-resistant prime coat, and manufacturer's standard finish.
- B. The back box and door shall be constructed of 0.060 steel with provisions for electrical conduit connections into the sides and top:
- C. The door shall provide a key lock and shall include a glass or other transparent opening for viewing of all indicators.
- D. The control unit shall be modular in structure for ease of installation, maintenance, and future expansion.

2.18 NOTIFICATION APPLIANCES

- A. Visible and audible/visible signals shall be listed by Underwriters Laboratories Inc. per UL 1971 and/or 1638.
- B. Each indicating appliance circuit shall be electrically supervised for opens, grounds and short circuit faults, on the circuit wiring, and shall be so arranged that a fault condition on any indicating appliance circuit or group of circuits will not cause an alarm to sound. The occurrence of any fault will light the trouble LED and sound the system trouble sounder, but will not interfere with the proper operation of any circuit which does not have a fault condition.
- C. The notification appliance (combination audible/visible units only) shall produce a peak sound output of 90dba or greater as measured in an anechoic chamber. The visible signaling appliance shall maintain a minimum flash rate of 1Hz or greater regardless of power input voltage. The appliance shall also be capable of meeting the candela requirements of the blueprints presented by the Engineer and ADA. The appliance shall be capable of synchronization with all other appliances in the same field of view.
- D. The appliance shall be polarized to allow for electrical supervision of the system wiring.
- E. The unit shall be provided with terminals with barriers for input/output wiring and be able to mount a single gang or double gang box or double workbox with the use of an adapter plate.

- F. The unit shall have an input voltage range of 20-30 volts with either direct current or full wave rectified power.

#### 2.19 SPARE DEVICES

- A. Furnish the owner with a stock of spare initiating devices and notification appliances to allow for future addition/relocation of devices or replacement of equipment that fails after expiration of the warrantee period. Manufacturer and model number of spare devices shall match those of devices used for the system installation. Minimum number and type of devices per building shall be as indicated below:
  - 1. Three smoke detectors.
  - 2. One heat detector.
  - 3. Two manual pull stations.
  - 4. Six notification appliances corresponding to the type and proportion of notification appliances installed.

### PART 3 - EXECUTION

#### 3.1 INSPECTION

- A. Contractor shall be responsible to attend a mandatory pre-bid walk through of the building. If required, an additional pre-bid inspection can be arranged. The contractor shall be responsible to examine all areas and conditions under which fire alarm systems are to be installed and identify conditions detrimental to proper completion of the work. All unsatisfactory conditions shall be specifically identified in the bid.

#### 3.2 INSTALLATION

- A. Installation shall be in accordance with the NEC, NFPA 72, local and state codes, as shown on the drawings, and as recommended by the major equipment manufacturer.
- B. All conduit, junction boxes, conduit supports and hangers shall be concealed in finished areas and may be exposed in unfinished areas.
- C. All fire detection and alarm system devices, control panels and remote annunciator (unless otherwise noted on drawings) shall be flush mounted when located in finished areas and may be surface mounted when located in unfinished areas.
- D. Contractor is responsible for making his own job check and any necessary adjustments in the design prior to installation. Make final coordination with existing building elements and adjust design as necessary. Major conflicts shall be brought to the attention of the Project Engineer for resolution.

#### 3.3 FIELD QUALITY CONTROL

- A. Obtain permits and post bonds as required by state and local AHJ's (Authorities Having Jurisdiction).

- B. Inform AHJ's of job progress. Request presence of AHJ's, perform tests, and document results using Contractor's Material and Test Certificates.

### 3.4 TESTING/TRAINING

- A. Make and pay for all tests required by applicable codes during and after completion of the work and correct and defects in the systems indicated by the tests.
- B. The service of a competent, factory-trained engineer or technician authorized by the manufacturer of the fire alarm equipment shall be provided to technically supervise and participate during all of the adjustments and tests for the system.
- C. Testing shall include but not be limited to the following:
  - 1. Before energizing the cables and wires, check for correct connections and test for short circuits, ground faults, continuity, and insulation.
  - 2. Close each sprinkler system flow valve and verify proper supervisory alarm at the FACP.
  - 3. Verify activation of all flow switches.
  - 4. Open initiating device circuits and verify that the trouble signal actuates.
  - 5. Open and short notification appliance circuits and verify that trouble signal actuates.
  - 6. Ground initiating device circuits and verify response of trouble signals.
  - 7. Ground notification appliance circuits and verify response of trouble signals.
  - 8. Check all alarm notification devices for proper function.
  - 9. Each of the alarm conditions that the system is required to detect should be introduced on the system. Verify the proper receipt and the proper processing of the signal at the FACP and the correct activation of the control points.
  - 10. Test system batteries to verify that secondary power supply is sufficient to provide specified standby and alarm power.
- D. Train the Owner's maintenance personnel in the proper operation, testing and maintenance of all installed equipment. Training shall be sufficient to enable owner to service equipment, add or remove devices and make programming changes.

### 3.5 FINAL INSPECTION

- A. At the final inspection, a factory-trained representative of the manufacturer of the major equipment shall demonstrate that the system functions properly in every respect.

### 3.6 INSTRUCTION

- A. Instruction shall be required for operating the system. Hands-on demonstrations of the operation of all system components and the entire system including program changes and functions shall be provided.
- B. The contractor and/or the systems manufacturer's representatives shall provide a typewritten "Sequence of Operation."

### 3.7 CLEANING

- A. Remove dust, scale, debris, and foreign substances from interior and exterior of devices, equipment, and materials prior to installation.
- B. Upon job completion, remove tools, surplus materials and equipment, leaving all areas broom clean.

### 3.8 AUTHORITIES HAVING JURISDICTION

- A. of installation is subject to final inspection and approval by:
  - 1. State of Utah Fire Marshal's Office
  - 2. State of Utah Division of Facilities and Construction Management
  - 3. Building Maintenance Personnel
  - 4. Project Engineer.

END OF SECTION 13851

## SECTION 13930 - FIRE SPRINKLER SYSTEMS

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the contract apply to this section.
- B. Technical sections which describe related work such as Section 13851 relate to this section.

#### 1.2 SUMMARY

- A. Furnish all materials, equipment and supplies and perform all work and operations to design, construct and make functional fire sprinkler systems to protect all portions of the existing Administration, Laboratory, Heavy Equipment/Paint Storage and Warehouse/Shop buildings at the UDOT Region 3 complex in Orem, UT. The design shall meet the requirements of NFPA 13 and be in accordance with the bid drawings and specifications. Reference to other specifications, codes, standards or manuals which are a part of these specifications, but are not included herein, shall be the latest adopted edition of these publications.

#### 1.3 QUALITY ASSURANCE

- A. Materials, devices and equipment shall be Underwriters Laboratories listed and/or Factory Mutual approved for use in fire protection systems.
- B. Installer: The sub-contractor for the fire sprinkler system shall be duly licensed by the state of Utah. The sub-contractor must be engaged in the installation of the types of automatic fire sprinkler systems required for this project and be fully familiar with all local conditions, specified codes and requirements.
- C. Designer: The designer for the fire sprinkler system shall be a staff employee of the "Installer" and shall be a licensed engineer (Utah registration) with a minimum of 4 years experience in fire protection design or a Certified Engineering Technician in Fire Protection (NICET level III minimum). The Certification shall be active during the entire contract period. The designer shall certify that the drawings and installation are in accordance with all applicable provisions of NFPA 13, the plans and specifications. The designer shall make a complete and final inspection of the installation, including operating all alarms, control valves, checking all piping, seismic bracing, hangers, etc. After checking all components of the system, he shall provide a letter stating that the installation is complete, operational and in accordance with approved plans and specifications. If changes have been made in the installation since the plans were approved, the designer shall correct the shop drawings and provide as-built drawings to the Owner with the letter.

#### 1.4 SUBMITTALS

- A. Shop Drawings: The fire sprinkler contractor shall prepare complete shop drawings for each fire sprinkler system. Shop drawings shall be coordinated with structure and with all other trades. Show all piping, sprinklers, ceiling grid, lights, grilles, ducts, registers and diffusers, etc. Draw

sections to show relative elevations of piping, ductwork, conduit, cable trays, ceiling grid, beams, etc. Show heads symmetrically related to ceiling patterns and show sprinklers centered ( $\pm 2"$ ) in tiles in grid. The shop drawings shall contain, as a minimum, the information outlined and listed in NFPA 13 chapter 14. Submit fire sprinkler drawings and hydraulic calculations to each Authority Having Jurisdiction for review prior to starting work. Final design shall incorporate all requirements of the AHJ's. Work only from reviewed documents. Submit shop drawings to the following:

1. Project Engineer.
  2. Utah State Fire Marshal's Office
- B. To facilitate preparation of shop drawings, contractor may request CAD files of building floor plans from DFCM CAD Services or Project Engineer. Plans of other building systems (i.e. reflected ceiling plans, lighting plans, structural framing plans, mechanical plans, etc.), that may be required to prepare shop drawings, are available in printed format (PDF) only.
- C. Hydraulic Calculations: Furnish complete hydraulic calculations for the hydraulically most remote area of each different occupancy classification of each system.
- D. Descriptive Data: Descriptive data shall be submitted on the following items of material and/or equipment. Such data shall consist of manufacturer's or supplier's catalog information in sufficient detail to allow verification that the material and/or equipment meets the specification requirements, or is equal to that specified.
1. Backflow preventer, valves, trim, pipe, fittings, couplings, sprinklers, valve tamper and water flow alarm devices.
- E. Submittal Procedure: Prior to ordering or fabricating equipment, prepare shop drawings for submittal to Engineer and Utah State Fire Marshal's Office. Submit four sets of drawings, equipment data sheets and calculations to each AHJ for review. Any review comments, and associated drawing revisions, from the Utah State Fire Marshal's review that affect the system design shall be approved by the Engineer prior to installation.
- F. Upon completion of installation submit to Engineer two copies each:
1. Contractor's Material & Test Certificate for Underground Piping.
  2. Contractor's Material & Test Certificate for Aboveground Piping.
  3. As-built shop drawings with designer's signature and certification number.

## 1.5 WORK INCLUDED

### A. Site Fire Protection Equipment:

1. Furnish and install a new underground fire sprinkler supply main from existing underground water line to fire sprinkler riser location in each building. See drawing FP-1.1 for size and location of each fire sprinkler lateral. Installation of each fire sprinkler lateral shall conform to all applicable requirements of NFPA 13, NFPA 24 and state and local codes. Fire sprinkler installer shall be licensed by the State of Utah to install underground fire sprinkler service mains.

- B. Wet-pipe fire sprinkler system per NFPA 13 to protect all areas of each building (Administration, Laboratory, Heavy Equipment/Paint Storage and Warehouse/Shop). Work includes but is not limited to:
  - 1. Design and installation drawings, including hydraulic calculations.
  - 2. Fire sprinkler riser including backflow preventer, 2" main drain, wall mounted fire department connection and water flow switch.
  - 3. Fire sprinkler pipe, fittings, hangers and sprinklers.
  - 4. Drain and test valves.
  - 5. Signs, spare sprinklers, earthquake bracing, sprinkler escutcheons, testing and documentation.

#### 1.6 RELATED WORK

- A. Painting.
- B. Excavation and Backfill.
- C. Electrical Materials and Methods.
- D. Fire Alarm and Detection.

#### 1.7 SYSTEM DESCRIPTION

- A. Furnish and install a new underground fire sprinkler supply main to fire sprinkler riser in each building from existing 8" underground water main that is located near the center of the site. Refer to drawing FP-1.1 for location, size and approximate length of each fire sprinkler lateral. Work includes but is not limited to:
  - 1. Install, flush and test all new underground piping in accordance with the requirements of NFPA 13 and NFPA 24.
    - a. Pipe shall be run with a minimum of bends, fittings, etc.
    - b. Minimum depth of pipe cover shall be 5 feet or per local ordinance, whichever is greater.
    - c. All changes in direction shall be secured against movement.
    - d. Flange X spigot piece shall be secured to the underground elbow with steel rods.
    - e. All rods, bolts and other ferrous parts shall be protected from corrosion.
- B. Design, furnish and install new wet-pipe fire sprinkler systems for each building (Administration, Laboratory, Heavy Equipment/Paint Storage and Warehouse/Shop) in accordance with NFPA 13 to provide fire protection of ALL areas of each existing building. Work includes but is not limited to the following:
  - 1. Each building shall be protected by an independent fire sprinkler system with a dedicated underground supply main and fire sprinkler riser. The location of the fire sprinkler riser for each building shall be as indicated on the drawings. Each riser shall incorporate a double check backflow preventer (Ames Colt Series C200BFG or equal), 2" main drain to exterior and vane type water flow switch. Fire sprinkler risers shall conform to the schematic details included on project drawings.
  - 2. Provide and install a 2-way x 2-1/2" wall mount FDC on the exterior wall of each building at the fire sprinkler riser. Mount FDC between 18" and 48" above exterior grade. Provide 1/2" automatic ball drip to facilitate drainage of FDC piping.

3. Provide fire sprinkler protection for all concealed spaces (unless otherwise noted) enclosed wholly or partly by exposed combustible construction or that contain exposed combustible materials.
4. Piping shall be concealed above ceilings where ceilings are present and may be run exposed in areas without ceilings. Where horizontal piping is exposed, the piping shall be run as high as possible.
5. Where practical, install piping to drain back to the fire sprinkler riser. Where piping cannot be pitched to drain to the riser, provide auxiliary drains per NFPA 13 to facilitate drainage of the fire sprinkler piping.
6. Provide extra sprinklers per NFPA 13 for protection below overhead doors, ducts, conduit or similar exposed obstructions over 48" wide. Provide extra sprinklers as required by NFPA 13 where sprinkler discharge is obstructed.
7. Water filled piping shall be installed in areas where the temperature will be reliably maintained at or above 40° F. Where piping must be installed in areas with temperatures below 40°F, fill piping with antifreeze solution and isolate antifreeze solution from water filled piping with a reduced pressure zone backflow preventer/expansion tank assembly as indicated in NFPA 13 Figure 7.5.3.2.
8. Provide UL approved through penetration fire-stop system where fire sprinkler piping passes through fire rated walls.

## 1.8 SYSTEM DESIGN

### A. Design densities and areas of application (see drawings sheets FP-2.1 through FP-2.5).

1. Administration Building:
  - a. Storage, Janitorial, Elevator Equipment (including shaft/pit) and Plan Room: Ordinary hazard group 2, 0.20 gpm/sq. ft over entire room with 250 gpm hose allowance.
  - b. Mechanical, Electrical and Computer/Telecom Equipment rooms: Ordinary hazard group 1, 0.15 gpm/sq. ft over entire room with 250 gpm hose allowance.
  - c. All other areas: Light hazard, 0.10 gpm/sq. ft over 1,500 sq. ft with 100 gpm hose allowance.
2. Laboratory Building:
  - a. Lab Space 110, Vehicle Storage 118, Lab Space 117 and Janitorial 111: Ordinary hazard group 2, 0.20 gpm/sq. ft over 1,500 sq ft with 250 gpm hose allowance.
  - b. Mechanical/Electrical 114, Communications 115 and Moist Room 116: Ordinary hazard group 1, 0.15 gpm/sq. ft over entire room with 250 gpm hose allowance.
  - c. All other areas: Light hazard, 0.10 gpm/sq. ft over 1,500 sq. ft with 100 gpm hose allowance.
3. Heavy Equipment/Paint Storage Building:
  - a. Storage, Vehicle Maintenance and Welding Shop: Ordinary hazard group 2, 0.20 gpm/sq. ft over 1,500 sq ft with 250 gpm hose allowance.
  - b. Mechanical Room: Ordinary hazard group 1, 0.15 gpm/sq. ft over entire room with 250 gpm hose allowance.

- c. Office, Restrooms and Training Room: Light hazard, 0.10 gpm/sq. ft over entire room with 100 gpm hose allowance.
    - d. Paint Storage, Paint Shop and Paint Equipment Storage: Extra Hazard Group 2, 0.40 gpm/sq ft over 2,500 sq ft with 500 gpm hose allowance.
  - 4. Warehouse/Shop Building:
    - a. Corridor, Offices, Restrooms, Break room and Electrical Lab: Light hazard, 0.10 gpm/sq. ft over entire room with 100 gpm hose allowance.
    - b. Mechanical Room: Ordinary hazard group 1, 0.15 gpm/sq. ft over entire room with 250 gpm hose allowance.
    - c. Wood Shop, Carpenter Shop, Electrical Shop, Storage Mezzanine and Janitorial: Ordinary hazard group 2, 0.20 gpm/sq. ft over 1,500 sq ft with 250 gpm hose allowance.
    - d. Warehouse: Protect entire warehouse area for on tread storage of rubber tires on portable racks to a maximum height of 6'. Minimum discharge density shall be 0.32 gpm/sq ft over 2,000 sq ft with 500 gpm hose allowance.
  - 5. The size of the remote area may be decreased, where applicable, in accordance with NFPA 13 11.2.3.2.3.1 where quick response sprinklers are used.
  - 6. The design area shall be the hydraulically most remote rectangular area having a dimension parallel to the branch line equal to, or greater than, 1.2 times the square root of the area of sprinkler operation.
- B. Maximum coverage per sprinkler.
  - 1. Extra Hazard areas and Warehouse: 100 sq. ft
  - 2. Ordinary Hazard: 130 sq. ft.
  - 3. Light Hazard: 225 sq. ft
  - 4. Sprinkler spacing may exceed that listed above if extended coverage sprinklers are used. Spacing for extended coverage sprinklers shall be in accordance with the manufacturer's cut sheet for the specific sprinkler used.
- C. Fire sprinkler system shall be hydraulically calculated. The following water pressure and flow shall be used as the basis for the hydraulic calculations:
  - Static Pressure: 91 psi
  - Residual Pressure: 80 psi
  - Flow: 1,343 gpm

The water pressure and flows reported above based on a flow test conducted 4/14/06 using existing hydrants connected to 8" looped site main and reduced by 20% in accordance with the engineer's water supply analysis. No addition reduction of the flow test or pressure margin in hydraulic calculations will be required.
- D. Hydraulic calculations for the fire sprinkler system shall extend to the point of connection with the existing 8" looped site main near each building.

## 1.9 WARRANTY

- A. Materials, equipment, and workmanship shall be free from defects for 12 months from the "Date Left in Service with All Control Valves Open," shown on "Contractor's Material and Test Certificate." If any Work is found to be defective, Contractor shall promptly, without cost to Owner, and in accordance with Owner's instructions, either correct such defective Work, or if it has been rejected by Owner, remove it from the site and replace it with non-defective Work. Submit two copies of Warranty Certificates to Engineer.

## 1.10 REFERENCES

- A. NFPA (National Fire Protection Association) 13, "Installation of Sprinkler Systems," 2002.
- B. NFPA 24, "Standard for the Installation of Private Fire Service Mains and Their Appurtenances", 2002.
- C. NFPA 70, "National Electrical Code", 2005.
- D. NFPA 72, "National Fire Alarm Code", 2002.
- E. IFC (International Fire Code), 2003
- F. IBC (International Building Code), 2003
- G. IBC Standards, 2003.
- H. Underwriters Laboratories "Fire Protection Equipment Directory," current edition.
- I. Factory Mutual Systems "Approval Guide," current edition.

## PART 2 - PRODUCTS

### 2.1 GENERAL

- A. Materials, devices and equipment shall be Underwriters Laboratories listed or Factory Mutual approved for use in fire protection systems.

### 2.2 PIPE

- A. Interior Piping: All piping shall be steel and shall meet or exceed the following standards: ASTM A795, ANSI/ASTM A53, ASTM A135, ANSI B36-10M, UL CRR (Corrosion Resistance Rating) minimum 1.0 for threaded pipe.
- B. Underground Piping:
  - 1. All underground piping to be approved for potable water use.
  - 2. PVC, Class 150, AWWA C900.
  - 3. Ductile iron, Class 50, AWWA C104, C105, C110, C115, C150, C151 and/or C160.
    - a. All ductile iron pipe shall be encased within polyethylene per ANSI A21.5.

## 2.3 FITTINGS

### A. Interior Piping:

1. Cast iron threaded, ANSI B16.4.
2. Cast iron flanged, ANSI B16.1.
3. Malleable iron threaded, ANSI B16.3.
4. Forged steel fittings, socket welded and threaded, ANSI B16.11.
5. Plain end couplings and fittings, saddle couplings, and clamp type couplings are not acceptable.
6. Other types of fittings may be used, but only those investigated and listed for this service and approved by the project engineer.

### B. Underground Piping:

1. Chlorinated Polyvinyl Chloride (CPVC), ASTM F437 and/or F439.
2. Ductile iron or cast iron, ASME B16.4, B16.1 and/or B16.3.

## 2.4 HANGERS

- A. Hangers shall conform to the minimum requirements of NFPA 13.

## 2.5 SEISMIC FITTINGS AND BRACES

- A. Sway bracing is required and shall conform to the minimum requirements of NFPA 13.

## 2.6 SPRINKLERS

- A. Ordinary and light hazard areas without ceilings: 1/2" orifice, small frame, quick response upright or pendent, ordinary or intermediate temperature, glass bulb. Use brass finish if the surrounding structure is unpainted or a factory white finish if the surrounding structure is painted.
- B. Extra hazard and Warehouse areas without ceilings: Large or extra Large orifice, standard response, upright or pendent, high temperature, glass bulb. Use brass finish if the surrounding structure is unpainted or a factory white finish if the surrounding structure is painted.
- C. Areas with finished ceilings: Small frame, quick response, ordinary temperature, chrome or white with matching 2-piece recessed escutcheons. Sprinklers shall be located within 2" of the center or quarter points of the ceiling tiles.
- D. Sprinklers of intermediate and high temperature ratings shall be installed in specific locations as required by NFPA 13.
- E. All sprinklers installed in areas designated as light hazard shall be quick response type sprinklers.
- F. Provide a minimum of one spare head of each type for spare head cabinet and one head wrench for each type sprinkler. The minimum number of spare sprinklers provided shall be in accordance with NFPA 13.

## 2.7 VALVES

A. Fire Sprinkler System Risers:

1. Provide a double check backflow prevention assembly with butterfly pattern control valves and pressure gauges on both sides of device. Ames Colt Series C200BFG or equal.
2. 2" angle valve for main drain. Extend discharge from main drain to building exterior.

2.8 FIRE DEPARTMENT CONNECTION

- A. Administration and Laboratory Building: Provide a polished brass, 2-way by 2-1/2" wall mount fire department connection with national standard threads, breakable caps and permanent sign labeled "Auto. Spkr.". Mount FDC between 18" and 48" above finished exterior grade.
- B. Heavy Equipment/Paint Storage and Warehouse/Shop Buildings: Provide a flush mounted, chrome, 4-way wall mount fire department connection with national standard threads, threaded caps and permanent sign labeled "Auto. Spkr.". Mount FDC between 18" and 48" above finished exterior grade.
- C. Swing pattern, grooved end check valve.
- D. 1/2" automatic ball drip.

2.9 ALARM DEVICES: Note: Devices are furnished and installed by fire sprinkler contractor and wired by fire alarm contractor.

- A. Valve tamper switches: The valve tamper switches shall be SPDT electrical switches rated for 125 Vac for monitoring the position of control. Switches shall be built-in on the butterfly pattern control valves.
- B. Water flow switch: Furnish and install a water flow detector for each riser designed for wet pipe sprinkler systems, listed by UL and approved by Factory Mutual. Detector shall be vane type installed above the riser check valve for actuation of two SPDT switches rated for 125 Vac at water flows of 10 gpm or greater.
- C. Exterior alarm shall be installed above each FDC as specified in section 13851.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Inspect job site prior to fabricating materials. Coordinate and sequence installation with the progress of other mechanical and structural systems and components.
- B. Contractor shall be responsible to attend a mandatory pre-bid walk through of the building. If required, an additional pre-bid inspection can be arranged. The contractor shall be responsible to examine all areas and conditions under which fire sprinkler systems are to be installed and identify conditions detrimental to proper completion of the work. All unsatisfactory conditions shall be specifically identified in the bid.

### 3.2 INSTALLATION

- A. Install systems in compliance with methods detailed in NFPA 13 including seismic requirements for Area 3.
- B. Offset as needed for other trades. Avoid conflict in areas of tight construction. Do not obstruct access to air control boxes, access doors, lights or other ceiling mounted equipment.
- C. Submit piping and equipment data sheets for review by the Engineer/Engineer prior to ordering or fabricating equipment.
- D. Close pipe openings with caps or plugs during installation. Cover and protect components of the system against dirt and chemical or mechanical injury.
- E. Provide concrete splash blocks for drains test valve discharge, etc. Concrete splash blocks shall be pre-fabricated, 2-1/2" thick, Amcor or Engineer approved equal. Where valves discharge to permanent paved surface splash blocks are not required.
- F. Piping shall only be installed in areas where temperatures will not drop below 40 deg F. If piping must be installed in areas where the temperature is not maintained above 40 °F, the piping must be part of a dry-pipe system in conformance with the requirements of NFPA 13. Small isolated areas subjected to freezing temperatures may be protected by a fire sprinkler piping filled with an antifreeze solution in as allowed by NFPA 13.
- G. Provide white painted escutcheons around exposed piping where piping passes through walls or ceilings in a finished area.
- H. Provide through penetration fire-stop systems to protect piping penetrations through rated walls or floors. The rating of the through penetration fire-stop system shall be equivalent to the rating of the wall or floor penetrated.

### 3.3 FIELD QUALITY CONTROL

- A. Obtain permits and post bonds as required by state and local AHJ's (Authorities Having Jurisdiction).
- B. Inform AHJ's of job progress. Request presence of AHJ'S, perform tests, and document results using Contractor's Material and Test Certificates.

### 3.4 TESTING

- A. Complete flush underground piping in accordance with NFPA 13 10.10.2.1. Document flushing test on Contractor's Material and Test Certificate for Underground Piping. Do not connect underground piping to overhead piping until after flushing tests have been completed.
- B. Provide hydrostatic test on underground piping in accordance with NFPA 13 10.10.2.2.
- C. Hydrostatically test all overhead piping for two hours at 200 psi (or 50 psi higher than the maximum anticipated static pressure) with no loss in pressure and no visible leakage. Conduct the testing after all of the fire sprinklers and piping are installed. Have the tests witnessed by

the AHJ's and Engineer. Submit a Contractor's Material and Test Certificate to the Engineer upon successful completion of the testing.

- D. Perform all system operation tests required by NFPA 13. Every water flow detector used on the project must be tested to ensure proper operation and retard settings.
- E. Train the Owner's maintenance personnel in the proper operation, testing and maintenance of all installed equipment.
- F. Conduct an inspection and operational test (main drain and inspector's test) at the end of the one-year guarantee period. The inspection and testing shall be in accordance with manufacturer's recommendations and NFPA 25. A written report is to be sent to the Owner upon completion of the inspection. Fire sprinkler installer shall conduct the tests.

### 3.5 CLEANING

- A. Remove oil, scale, debris, and foreign substances from interior and exterior of devices, equipment, and materials prior to installation.
- B. Upon job completion, remove tools, surplus materials and equipment, leaving all areas broom clean.

### 3.6 DISINFECTION

- A. Introduce dosage of 50 PPM chlorine in overhead piping. During the contact period open and close all system valves several times. At end of 24-hour retention period at least 10 PPM shall remain throughout the piping.
- B. At end of retention period, flush system until residual chlorine is reduced to less than 1.0 PPM.

### 3.7 ACCEPTANCE

- A. Acceptance of installation is subject to final inspection and approval by:
  - 1. State of Utah DFCM
  - 2. Utah State Fire Marshal
  - 3. Project Engineer

End of Section 13930